

WE CLAIM:

1. A cetane improver for diesel fuel comprising a nitrated C_1-C_4 ester of a fatty acid, said ester being derived from a naturally occurring triglyceride, said nitration having been accomplished by hydration of at least one double bond of said fatty acid and subsequent nitration of the secondary alcohols thus produced.

2. A cetane improver as set forth in claim 1 which is a lubricity enhancer.

3. A cetane improver as set forth in claim 1 which is a detergency enhancer.

4. A cetane improver as set forth in claim 2 which is a detergency enhancer.

5. An improved diesel fuel comprising the cetane improver of claim 1, 2, 3 or 4.

6. A cetane improver as set forth in claim 1, 2, 3 or 4 where said ester is formed by a process including transesterification of a vegetable oil.

7. A cetane improver as set forth in claim 1, 2, 3 or 4 where said ester is formed by a process including hydrolysis of a vegetable oil followed by esterification of fatty acids formed by said hydrolysis.

8. An additive for providing a diesel fuel with enhanced cetane and enhanced lubricity comprising a nitrated C_1-C_4 ester of a fatty acid as set forth in claim 2, said additive being capable, when added to said diesel fuel in an effective amount, of providing more than 90% of the cetane enhancement and more than 50% of the lubricity enhancement of said diesel fuel.

9. An additive for providing a diesel fuel with enhanced cetane, enhanced lubricity and enhanced detergency comprising a nitrated C_1-C_4 ester of a fatty acid as set forth in claim 4, said additive being capable, when added to said diesel fuel in an effective amount, of providing more than 90% of the

cetane enhancement, more than 50% of the lubricity enhancement of said diesel fuel and more than 50% of the detergency enhancement of said diesel fuel.

10. An additive for providing a diesel fuel with enhanced cetane and enhanced detergency comprising a nitrated C₁-C₄ ester of a fatty acid as set forth in claim 3, said additive being capable, when added to said diesel fuel in an effective amount, of providing more than 90% of the cetane enhancement and more than 50% of the detergency enhancement of said diesel fuel.

11. A method for improving the cetane of a diesel fuel comprising admixing a nitrated C₁-C₄ ester of a fatty acid as set forth in claim 1 with said diesel fuel.

12. A method for improving the cetane and the lubricity of a diesel fuel comprising admixing a nitrated C₁-C₄ ester of a fatty acid as set forth in claim 2 with said diesel fuel.

13. A method for improving the cetane and the detergency of a diesel fuel comprising admixing a nitrated C₁-C₄ ester of a fatty acid as set forth in claim 3 with said diesel fuel.

14. A method for improving the cetane, the detergency and the lubricity of a diesel fuel comprising admixing a nitrated C₁-C₄ ester of a fatty acid as set forth in claim 4 with said diesel fuel.

15. A method as set forth in claim 11, 12, 13 or 14 wherein said nitrated ester is formed by a process including transesterification of a vegetable oil

16. A method as set forth in claim 11, 12, 13 or 14 wherein said nitrated ester is formed by a process including hydrolysis of a vegetable oil followed by esterification of fatty acids formed by said hydrolysis.

17. A method for improving the cetane of a diesel fuel comprising:

preparing a nitrated C₁-C₄ ester of a fatty acid by a process that includes converting a naturally occurring tryglyceride into a fatty acid, hydrating at least one double bond of said fatty acid to

produce a pair of secondary alcohol moieties on opposite sides of the hydrated double bond, and nitrating the secondary alcohols; and

adding said nitrated ester to said diesel fuel.

18. A method as set forth in claim 17, wherein said converting includes transesterification of a vegetable oil.

19. A method as set forth in claim 17, wherein said converting includes hydrolysis of a vegetable oil followed by esterification of the fatty acids formed during hydrolysis.

20. A method for improving the cetane and lubricity of a diesel fuel comprising:

preparing a nitrated C_1 - C_4 ester of a fatty acid by a process that includes converting a naturally occurring triglyceride into a fatty acid, hydrating at least one double bond of said fatty acid to produce a pair of secondary alcohol moieties on opposite sides of the hydrated double bond, and nitrating the secondary alcohols; and

adding said nitrated ester to said diesel fuel.

21. A method as set forth in claim 20, wherein said converting includes transesterification of a vegetable oil.

22. A method as set forth in claim 20 wherein said converting includes hydrolysis of a vegetable oil followed by esterification of the fatty acids formed during hydrolysis.

23. A method for improving the cetane and detergency of a diesel fuel comprising:

preparing a nitrated C_1 - C_4 ester of a fatty acid by a process that includes converting a naturally occurring triglyceride into a fatty acid, hydrating at least one double bond of said fatty acid to produce a pair of secondary alcohol moieties on opposite sides of the hydrated double bond, and nitrating the secondary alcohols; and

adding said nitrated ester to said diesel fuel.

24. A method as set forth in claim 23, wherein said converting includes transesterification of a vegetable oil.

25. A method as set forth in claim 23, wherein said converting includes hydrolysis of a vegetable oil followed by esterification of the fatty acids formed during hydrolysis.

26. A method for improving the cetane, lubricity and detergency of a diesel fuel comprising:

preparing a nitrated C_1 - C_4 ester of a fatty acid by a process that includes converting a naturally occurring triglyceride into a fatty acid, hydrating at least one double bond of said fatty acid to produce a pair of secondary alcohol moieties on opposite sides of the hydrated double bond, and nitrating the secondary alcohols; and

adding said nitrated ester to said diesel fuel.

27. A method as set forth in claim 26, wherein said converting includes transesterification of a vegetable oil.

28. A method as set forth in claim 26, wherein said converting includes hydrolysis of a vegetable oil followed by esterification of the fatty acids formed during hydrolysis.